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## 1982 FRESH MARKET STAKE TOMATO TRIALS

Monica K. Wertz, William M. Brooks, James D. Utzinger,  
Eugene C. Wittmeyer and Gerald G. Myers<sup>1</sup>

This is another report of a continuing series designed to evaluate currently used and new cultivars of tomatoes.

Stake Trial. Ten cultivars were grown with 3 replications and 47 other cultivars were grown in non-replicated observation plots. Spacing was 48 inches between rows and 18 inches between plants within rows. There were 15 plants per single row plot, equivalent to 7,260 plants per acre. A new pruning, typing, and staking procedure was implemented this year which more closely resembled that used in commercial production. Plants were pruned to the first cluster only. Stakes were placed at the beginning and end of the plots and at 3 plant intervals. This staking scheme will be revised for subsequent trials, however, since too much pressure was exerted on the end stakes, resulting in some stake breakage. Other variations may be staking at 2 plant intervals, and double staking at the ends of the plots. Yield this year was the best in recent years, due in part to this new staking and pruning method. Another factor contributing to higher yields was the new plot location. The soil where the plots were located had not been in tomatoes for several years.

Cultural Practices. Seed was sown on April 6, 1982. Seedlings were transplanted to 2- $\frac{1}{4}$ " cell packs on April 12 and field set on May 20. One thousand pounds per acre 15-15-15 were plowed down in April. At field planting, each plant received  $\frac{1}{2}$  pint of 10-52-8 starter solution at 3 lb. per 50 gallons. Seventy-five lb./A 33.5-0-0 was sidedressed in late June. For weed control, Treflan and Sencor, at the recommended rates, were applied just prior to planting, and Amiben granular was applied just before staking. Irrigation was applied at a rate of 1" per week as needed.

Weather Data. University Farm Weather Station - Columbus.

<u>Month</u>	<u>Mean Temperatures (°F)</u>			<u>Precipitation</u>	
	<u>Max.</u>	<u>Min.</u>	<u>Avg.</u>	<u>Rain(inches)</u>	<u>Deviation from Normal</u>
May	80.3	53.8	67.1	0.14	-4.15
June	78.7	55.4	67.1	4.40	+0.39
July	86.9	62.2	74.8	1.36	-2.88
August	81.6	57.1	69.3	0.97	-2.68
September	74.6	53.6	64.1	3.20	+0.31

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## Code

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B-1	George J. Ball, Inc., West Chicago, IL 60185
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S-1	Stokes Seeds, Inc., 737 Main St., Box 548, Buffalo, NY 14240
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## Results and Discussion

The first harvest was made on July 21 and the last on September 30. Some plants were damaged or lost soon after transplanting to the field due to hail. Yield results were adjusted accordingly. Overall, both number 1 and total marketable yield values were higher this year than in recent years and fruit size on the average was larger than in past trials. Relatively good climatic conditions along with successful weed control contributed to the production of this "banner" crop. The new pruning and staking procedure and site selection as mentioned before, were also contributing factors.

Results of the replicated trial are in Table 1. Freedom was the highest in number 1 yield, both early and for the season and also was the highest in early total marketable yield. It also had the largest fruit size early and second largest for the season. Duke, which looked very good in our observation trial last year, placed second in early number 1 and total marketable yields and in fruit size. It also finished the season relatively well, maintaining a high percentage of number 1 fruit. Florida 1B started off well in early yield data, topping the group with an impressive 96% of early yield in the number 1 fruit category with yield for the season dropping off somewhat; however, fruit size for the season was the largest of the ten cultivars in the replicated trial. Castlehy 105 also looked good overall, finishing with a high marketable yield for the season.

Yield results in the observation trial (Table 2) were also extremely good this year; however, wide variation existed between the cultivars. The two most impressive lines were Hybrid #46, and FM-X45. Hybrid #46 was the best early line overall. FM-X45 was a slow starting line of the highest quality fruit which finished off the season in the top ranks of yield, quality, and fruit size. Other cultivars showing promise and meriting further observation were FM2V22, Flora-Dade, Castlehy 1041, Champion VFNT, ACX-24151, 1T651, and Hayslip.

Disease Resistance, Fruit Quality, and Plant Habit. All the cultivars tested in the stake trial were rated for interval appearance and fruit defects. Table 3 lists these ratings, along with disease resistances as listed by the seed company for each. Plant habit classifications, i.e. determinate, indeterminate, and semi-determinate are listed in the last column. This data is provided in order to give additional information on the cultivars a grower may be interested in from a yield standpoint. The cultivars in Table 3 are listed in the same order as they appear in Tables 1 and 2.

Table 1. Replicated Stake Trial: Yield, Grade, and Fruit Size of Tomato Cultivars, Columbus, Ohio, 1982

Cultivar*	Seed Source	Early Harvest to August 3					Total Harvest to September 30				
		Marketable Yield		Percent		Fruit Size (oz.)	Marketable Yield		Percent		Fruit Size (oz.)
		(Tons/Acre)		by Weight			(Tons/Acre)		By Weight		
		No. 1	Total	No. 1	Culls		No. 1	Total	No. 1	Culls	
Freedom	A-1	5.62	6.15	88	4	6.13	36.30	48.11	70	7	6.46
Duke	P-2	5.05	5.48	88	5	6.11	34.39	45.38	72	6	5.80
Florida 1B	F-3	4.03	4.16	96	1	5.29	26.47	39.52	63	6	6.89
Hybrid Red Champion	F-2	3.42	4.19	76	6	5.62	34.03	50.58	64	6	5.86
Firechief	M-1	3.27	3.46	84	11	5.37	23.24	35.11	58	13	5.32
Jet Star	H-1	2.82	3.30	83	2	5.09	32.98	49.83	63	5	5.80
Castlehy 105	C-1	2.39	2.53	89	5	5.35	34.66	51.45	63	7	5.89
XPH 724B	A-2	2.02	2.17	82	12	5.26	33.34	49.30	64	5	4.89
Tempo	L-1	1.98	2.32	84	1	4.95	32.61	49.00	63	5	5.47
Big Pick	V-1	1.18	1.71	68	1	4.04	31.19	51.24	57	6	5.65
LSD (5%)		2.34	2.46			0.87	8.39	10.59			0.92

\*Cultivars ranked in decreasing order of early yield of U.S. No. 1 grade fruits. Data based on mean of 3 replications.

Table 2. Observation Stake Trial: Yield, Grade, and Fruit Size of Tomato Cultivars, Columbus, Ohio, 1982

Cultivar*	Seed Source	Early Harvest to August 3					Total Harvest to September 30				
		Marketable Yield		Percent		Fruit	Marketable Yield		Percent		Fruit
		(Tons/Acre)		By Weight			(Tons/Acre)		By Weight		
		No. 1	Total	No. 1	Culls	Size (oz.)	No. 1	Total	No. 1	Culls	Size (oz.)
Hybrid #46	F-1	8.86	9.99	89	3	8.04	38.07	52.37	70	4	8.02
Earlibright	S-1	7.45	9.85	74	3	2.95	12.05	23.38	48	6	3.27
FM2V22	H-1	7.07	7.43	89	6	5.12	45.25	60.69	71	5	5.02
Floramerica	S-1	7.04	7.11	98	1	7.30	38.32	54.88	53	10	7.67
Earlirouge	S-1	6.85	7.45	89	3	4.10	21.83	37.28	53	10	4.48
Flora-Dade	F-3	6.15	6.61	90	4	4.60	43.03	56.97	72	5	5.15
President Hybrid	L-1	6.15	6.56	65	30	5.49	31.07	42.11	65	12	6.72
MOX 3077	M-1	6.10	6.49	85	10	5.36	25.99	36.81	67	6	5.71
Royal Flush	F-1	6.05	7.04	86	7	7.45	35.02	49.56	67	6	6.73
FM-X48	F-1	5.47	5.98	91	6	6.54	28.72	42.13	64	6	6.55
Early Set	H-1	5.47	5.95	91	1	4.52	35.26	52.13	65	4	5.18
Basket Vee	S-1	5.47	5.90	82	11	3.90	21.71	37.51	54	7	4.85
FM-X60	F-1	5.40	5.85	92	1	7.28	23.35	35.12	62	6	6.91
Park's Extra Early	P-1	4.96	5.54	81	9	6.91	24.15	36.13	60	11	7.76
Burgis	F-3	4.55	5.11	75	12	4.56	37.80	47.17	75	7	5.36
Castlehy 1041	C-1	4.52	4.85	93	2	7.01	49.42	61.74	78	3	6.03
Champion VFNT	B-1	4.40	5.08	87	3	4.57	40.49	55.52	70	4	6.30
Early Girl	B-1	4.28	5.32	80	1	3.16	17.98	40.44	42	5	3.21
B 81.832	D-1	3.94	4.36	88	3	3.84	14.96	32.96	42	8	4.74
Big Pick VFNT	S-1	3.46	3.75	92	0	4.96	30.18	53.02	55	3	5.88
La Roma (Roma Hyb.)	B-1	3.44	3.58	96	2	1.98	23.84	38.58	59	5	1.68
1T651	B-2	3.41	4.04	84	5	5.65	32.96	50.77	61	6	7.27
Castlehy 1060	C-1	3.36	3.80	89	6	5.11	43.24	53.72	77	4	5.24
Hybrid #59	F-1	3.34	3.36	84	15	7.94	30.90	42.54	70	4	7.31
Super Fantastic VFN	B-1	3.32	4.62	72	15	5.19	30.13	47.02	60	6	5.24
Stokes Pak VFN	S-1	3.25	3.54	82	10	5.62	27.37	36.46	68	10	5.81
Park's Whopper	P-1	3.19	3.36	90	5	5.30	36.11	58.76	58	5	6.96
ACX-824151	A-1	3.12	3.73	84	8	5.37	42.35	55.83	71	6	7.21
Supersonic B	H-1	3.12	3.65	84	1	4.65	30.37	49.22	60	3	5.13
Pole King Hybrid	A-1	3.05	3.40	78	13	4.59	33.46	54.64	56	8	5.91
Better Boy	B-1	3.05	3.28	93	1	6.08	36.18	53.51	65	4	6.33
1T637	B-2	2.98	3.73	80	3	3.53	22.80	45.28	48	5	4.71
FM-X55A	F-1	2.87	3.44	83	8	4.76	14.38	28.53	45	11	4.25

Table 3. Fruit Disease Resistance<sup>1</sup>, Fruit Quality Ratings<sup>2</sup>, and Plant Habit<sup>3</sup> For Stake Trial Cultivars (Continued).

4 Cultivar	Disease Resistance	Persistent Green Shoulder	Concentric Cracking	Radial Cracking	Catface or Stylar Scar	Zippering	Blotchy or Ureven Ripening	Core Size	Internal Appearance	Plant Habit
Observation Stake: (Continued)										
Super Fantastic VFN	F <sub>1</sub> NV	3	3.5	4	4	4	4	4	4.5	Inde.
Stokes Pak VFN	F <sub>1+2</sub> NSV	-	3.5	4	4	4	4.5	4	4.5	Det.
Park's Whopper	F <sub>1</sub> NTV	3.5	3.5	4	4	3.5	4	4	4.5	Inde.
ACX-824151		4.5	4.5	4	4	4.5	4.5	4	4.5	Inde.
Supersonic B	F <sub>1</sub> V	4	4	4.5	4	3.5	4.5	4	4	Inde.
Pole King Hybrid	F <sub>1+2</sub> V	4	4.5	4.5	4.5	4.5	4.5	3	4	Inde.
Better Boy	F <sub>1</sub> NV	4	5	4	4.5	4.5	4.5	3	4	Inde.
1T637	F <sub>1</sub> TV	4	3.5	4	4	4	4	4	4	Inde.
FM-X55A	F <sub>1+2</sub> V	4.5	4	4.5	4.5	4	4.5	4	4.5	Semi-Det.
Hayslip	F <sub>1+2</sub> SV	5	4.5	4.5	4.5	3.5	4.5	4.5	4	Semi-Det.
Ultra Girl VFN	F <sub>1</sub> NV	-	4.5	4.5	4.5	4	3.5	3	3	Semi-Det.
XPH 726	F <sub>1</sub> V	4	5	4	4.5	4.5	4.5	4	4.5	Semi-Det.
Burpee VF	F <sub>1</sub> V	4	4.5	4	4	4.5	3.5	3	3.5	Inde.
82 W 68	F <sub>1</sub> NTV	4	4	4.5	4.5	4.5	4.5	3.5	3.5	Inde.
1T644	F <sub>1</sub> TV	5	3	4.5	4	3.5	5	4	4	Inde.
Sub Arctic Maxi		-	4.5	4.5	5	4	4.5	3.5	3.5	Det.
Hg 81.833	C <sub>5</sub> F <sub>1+2</sub> T	3.5	3.5	4	5	4.5	5	3.5	3.5	Inde.
FM-X45	F <sub>1+2</sub> V	-	3.5	4	4.5	4	3	4	4.5	Semi-Det.
XPH 676	AF <sub>1+2</sub> SV	5	5	4	4.5	4	5	3	4	Semi-Det.
	(heteroz. for T <sub>2</sub> )									
Blazer	F <sub>1+2</sub> V	-	3	3	4.5	4.5	2.5	3.5	3.5	Det.
Quick Pick	F <sub>1</sub> FNT	4	3	3	5	5	4.5	3.5	3.5	Inde.
ACX-8183M		4	5	4	4	3.5	4	3.5	4	Inde.
ACX-8183		3	5	4	4.5	4.5	3.5	4	4	Inde.

<sup>1</sup>Disease Resistance Codes: A = Alternaria Stem Canker, C= Cladosporium Leaf Mold, F<sub>1</sub> = Fusarium Wilt (race 1), F<sub>2</sub> = Fusarium Wilt (race 2), N = Root Knot Nematode, S = Stemphyllium (gray leaf spot), T = TMV, V = Verticillium

<sup>2</sup>Quality Ratings for all variables were made on a 1 to 5 scale where 5 indicates no problem and 1 is a severe problem.

<sup>3</sup>Plant Habit Abbreviations: Inde. = Indeterminate, Det. = Determinate, Semi-Det. = Semi-Determinate.

<sup>4</sup>Cultivars are in the order they appear in Tables 1 and 2.

<sup>5</sup>No rating means the cultivar has the uniform ripening gene (no dark green shoulder).

<sup>6</sup>Internal appearance is based on internal color, and wall thickness.



Table 3. Fruit Disease Resistance<sup>1</sup>, Fruit Quality Ratings<sup>2</sup>, and Plant Habit<sup>3</sup> For Stake Trial Cultivars.

Cultivar <sup>4</sup>	Disease Resistance	Persistent Green Shoulder	Concentric Cracking	Radial Cracking	Catface or Styler Scar	Zippering	Blotchy or Uneven Ripening	Core Size	Internal Appearance	Plant Habit
<u>Replicated Stake:</u>										
Freedom	AF <sub>1</sub> +2SV	-	5	4	4	4.5	4.5	4	4.5	Det.
Duke	F <sub>1</sub> +2V	5	5	4	4.5	4.5	4.5	4	4.5	Semi-Det.
Florida 1B	F <sub>1</sub> +2SV	4	5	4.5	5	4.5	4.5	4.5	5	Det.
Hybrid Red Champion		5	5	4.5	4	4	5	4	4.5	Inde.
Firechief	F <sub>1</sub> +2V	-	5	4.5	4	4	3.5	4	4	Semi-Det.
Jet Star	F <sub>1</sub> V	-	4.5	4.5	4.5	4.5	5	3.5	4	Inde.
Castlehy 105	F <sub>1</sub> +2SV	3.5	5	4.5	5	4.5	3.5	4	4	Inde.
XPH 724B	A <sub>1</sub> F <sub>1</sub> +2SV	4.5	5	4.5	4.5	4.5	5	4	4	Semi-Det.
Tempo	F <sub>1</sub> +2S	3	5	4.5	4	4	4	3	4	Semi-Det.
Big Pick	F <sub>1</sub> +2 (NT Some Tolerance)	-	5	3	3	4.5	3	4	4	Inde.
<u>Observation Stake:</u>										
Hybrid #46	F <sub>1</sub> +2V	-	3.5	4	4.5	3	4	4	4.5	Semi-Det.
Earlibright		-	4.5	4.5	4.5	4.5	4	4	4	Det.
FM2V22	F <sub>1</sub> V	4	4	3.5	4	4	4	4	4.5	Inde.
Floramerica	F <sub>1</sub> +2V	4	4.5	4.5	4	4	4	4.5	4.5	Det.
Earlirouge	V	-	4.5	4.5	4.5	4.5	5	4	3.5	Det.
Flora-Dade	F <sub>1</sub> +2SV	5	4.5	4.5	4.5	4.5	4.5	3.5	4	Semi-Det.
President Hybrid		4	3.5	4	4.5	4	4.5	3	3.5	Inde.
MOX 3077	F <sub>1</sub> V	-	4	4	4.5	4	4	4	4	Det.
Royal Flush		3	3.5	3.5	4	4	3.5	4	4.5	Det.
FM-X48	F <sub>1</sub> +2V	-	4	4	4	4	4.5	4	4	Semi-Det.
Early Set		-	4	3.5	4	4	4	4	4	Inde.
Basket Vee	F <sub>1</sub> V	-	4.5	4.5	4	4.5	4.5	4	4	Det.
FM-X60	F <sub>1</sub> +2V	-	4	4	4	4	4.5	3	2.5	Det.
Park's Extra Early	F <sub>1</sub> NTV	4	3	4	4	4.5	5	3	4	Semi-Det.
Burgis	F <sub>1</sub> +2SV	-	4.5	4.5	4.5	4.5	4.5	4.5	4.5	Semi-Det.
Castlehy 1041		4	4.5	4	4	3.5	4.5	4	4.5	Det.
Champion VFNT	F <sub>1</sub> NTV	4	5	4.5	4.5	4.5	5	3.5	3.5	Inde.
Early Girl	FV	5	5	4	4.5	4.5	5	4.5	4	Inde.
B 81. 832	CsF <sub>1</sub> +2T	-	3.5	4.5	4.5	4.5	5	3	3	Inde.
Big Pick VFNT	F <sub>1</sub> NTV	-	4.5	4.5	4	4.5	4	3.5	4	Inde.
La Roma (Roma Hyb.)	F <sub>1</sub> V	-	5	5	5	5	5	4	4.5	Det.
1T651	F <sub>1</sub> TV	4	4	4.5	4.5	4	4.5	4	4	Inde.
Castlehy 1060		5	5	4.5	4.5	5	5	5	5	Det.
Hybrid #59		-	3.5	3.5	4.5	4	4	3	4.5	Semi-Det.

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